

Objectives/Activities

Contamination of water supplies with organic pollutants such as PAHs, PCBs and cyanotoxins is one of the most important global problems. Recent EU Directives propose the determination of these target pollutants in drinking and surface water and set their maximum concentration. Resulting from the above, it is mandatory to monitor these analytes using appropriate methods. The availability of rapid, reliable screening method is prerequisite when a large number of samples must be analyzed, but on the other hand there is an urgent need of a confirmatory method for the analysis of these contaminants which belong to the priority pollutants list. Disadvantages of conventional methods of analysis can be overcome by using liquid chromatography-mass spectrometry (LC/MS/MS). In the frame of the accreditation of our laboratory in PAHs determination in potable and surface water by using LC/MS/MS it has been funded (2005-2009) by Antagonistikotita (Ministry of Development) with 311.3 KEuro. This will upgrade the instrumentation of our laboratory (HPLC/UV-Vis or FL or CD, IC, GC/ECD or FID and GC/MS), mainly by the purchase of the LC/MS/MS analytical device and will give new opportunity to our research and service activities. The Environmental Analysis Laboratory has been accredited by ESYD (N. of Accreditation 580) on 17/7/2009.

Current interests of our Laboratory are focused into the following:

- Method Development for the determination of toxic pollutants in trace level in water, foodstuff and environmental samples (pesticides, PCBs, PBRBs, chlorophenols, PAHs, BTX,

Laboratory for Environmental Analysis - Services

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VOCs, drug residues, cyanotoxins, organic halides)

- Method Development for the determination of Polychlorinated Biphenyls (PCBs) in water and Organic Halides in foodstuff (honey) by Solid Phase Microextraction (SPME) in combination with GC/ECD and GC/MS.
- Method Development for the determination of Polycyclic Aromatic Hydrocarbons (PAHs) in potable and surface water by using LC/MS/MS.
- Method Development for the determination and identification of cyanotoxins in surface and drinking water by using SPE and LC/MS-MS.
- Elaboration of MSc and PhD Thesis.
- Accreditation of the laboratory in cyanotoxins determination in potable and surface water by using LC/MS/MS (being the only Laboratory in Greece for that purpose).
- Services for the determination of toxic organic residues in trace level.

Personnel

[A. Hiskia](#) : director (permanent researcher); T. Triantis: (quality manager); A. Tsimeli (analyst), S. Zervou, I. Dimitrakopoulos, T. Kaloudis: (adjunct scientist).

Funded Projects

1. “Development of analytical infrastructure of the Environmental Analysis Laboratory, EKEFE Demokritos”, Antagonistikotita (Ministry of Development), Coordinator Dr. A. Hiskia, 311,3 K€, 2006-2008.
2. «Chemical analysis of air filters for the determination of Benzo(a)pyrene”, in the frame of services to PLINIOS SA, 7,31 K€.
3. “Chemical analysis of soil and water samples for the determination of Polycyclic Aromatic Hydrocarbons (PAHs)”, in the frame of services to PREFECTURE of DRAMA, 3,0 K€.
4. “Chemical analysis of air filters, wood and building materials for the determination of PCBs, PAHs, pentachlorophenol, hydroquinone and benzoquinone”, in the frame of services to PLINIOS SA, 2,7 K€.
5. “Determination of odor-causing compounds in water” Research project funded by EYDAP SA, 20 K€, 2008-2009.

Infrastructure

Spectrophotometers UV-VIS-near IR, GC equipped with FID, ECD and TCD, HPLC equipped

with UV-VIS and FLD, GC/MS, HPLC/MS/MS triple tetrapole, IC, Polarographic unit, TOC, SPE and SPME apparatus, oven, ultrasound bath, analytical balances, pHmeter, Rotary evaporator, ultrapure water apparatus.

Collaborations

Prof. D. Dionysiou (University of Cincinnati, USA, AOP for cyanobacteria toxins destruction), Dr. Jussi Meriluoto (Abo Akademi University, Finland, Method development for the determination and identification of cyanotoxins in surface and drinking water by using SPE and LC/MS-MS), Dr. S. Lacorte (Dep. of Environ. Chem., CID-CSIC, Barcelona, Analytical method development), Dr. T. Kaloudis, (EYDAP, trace organic analysis in water)